THE OPTICAL MAGIC LANTERN JOURNAL AND PHOTOGRAPHIC ENLARGER

EDITED BY J. HAY TAYLOR

A MAGAZINE OF POPULAR SCIENCE FOR THE LECTURE-ROOM AND THE DOMESTIC CIRCLE.

WITH WHICH IS INCORPORATED THE "LANTERN WORLD."

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NOTICES.

The *Optical Magic Lantern Journal and Photographic Enlarger* is issued on the 1st of every month, price Two Pence, and may be obtained from all Newsvendors, Railway News Stalls, Photographic Dealers, or from the Publishers, at the following rates, post free:—

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NOTES.

Civilisation in Pre-Historic Times.—At the London Institution Prof. W. M. F. Petrie gave a lecture a short time ago on "The Rise of Egyptian Civilisation." The lecture itself was full of matters of very great interest, and this was further enhanced by a series of photographs which were projected upon the screen. Mr. Petrie who has opened up over five thousand tombs in the course of his investigations and researches, explained that the tide of civilisation was at its flood in pre-historic times, and that it ebbed away before the advent of the dynasties. The professor traced the career of man back to about 7000 B.C.

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Fake or Trick Cinematograph Pictures.—On page 138 of last issue we made a few comments on what we termed "fake" cinematograph pictures. Mr. Urban, the managing director of the Warwick Trading Company, Limited, calls us to task for using the word "fake" under the circumstances, and explains that the style of picture we described should have been spoken of as a "trick film." This, he explains, differs from a "fake" inasmuch as the general understanding of a "fake" film is that of producing a film of a counterfeit representation of an actual event, such as has been practised extensively with South African war subjects, many of which were made in the suburbs of London, besides France and New Jersey, U.S.A. We may here say that no "fake" subjects of the war have been issued by the Warwick Trading Company, all theirs being actual photographs taken at the occurrence of the various events in Africa. Of "trick" subjects, such as we alluded to in last issue, they, however, publish a splendid collection.

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Free Lantern Lectures at Liverpool.—The Liverpool Corporation has inaugurated a series of free lantern lectures at the Picton Hall. The services of men and women who are well versed in the subjects on which they will treat have been engaged.

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What is a Photographic Society?—A member of several societies writes as follows:—"In the course of my business as a commercial traveller, not in the photographic line however, I visit numerous towns, and often drop into the meeting of any photographic society which may be in progress in any particular town in which I happen to be, hoping to spend a pleasant evening, and to hear what is taking place in the photo circles of the various towns. Well, judging from visits to several lately, they appear to be solely the hunting and advertising ground of a few commercial travellers engaged by dealers to show their particular cameras, plates, or paper. I do not blame the dealers, it shows their business aptitude in getting an audience, firing, gas, and the hundred and one conveniencies of a show-room free of cost under the guise of what is called a demonstration. At two consecutive visits to two different societies in two different towns I found the same commercial gentleman holding forth, he occupying the whole evening at each. Surely if the members cannot keep their own society going with papers and discussions it is, in my opinion, about time they closed up."

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Slides of Life in Canada.—We understand that Mr. H. M. Murray, Canadian Government Agent, 52, St. Enoch Square, Glasgow, with a view of giving a better knowledge of Canada, its natural and mineral resources, agricultural products, etc., will be glad to place at the disposal of school teachers, co-operative societies, and young men's institutions, a set of lantern slides showing views of some of the principal towns of the Dominion, with their respective industries. The set also includes scenes of agricultural life and work, such as ranching, dairying, etc., and accompanying each set is a descriptive pamphlet, which describes the various views in a short and comprehensive manner.

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The Largest Camera in the World.—The largest camera is said to belong to the Alton Railway Company, U.S.A. It took two and a half months to build, and cost something like £1,000. When extended it measures 20 feet long. In making the bellows some 40 gallons of glue were used, and the entire weight of the apparatus is estimated at 1,400 lbs.

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Getting Folks to Church.—The congregation at St. Clement's, Newtown, had been very scanty on Sunday evenings, so a bold stroke was made, and instead of the usual style of sermon it was decided to introduce the lantern, and style it a magic lantern exhibition. This had a magical effect, the church was speedily crowded, and the congregation listened with wrapped attention to the discourse on the life of Christ, and greatly admired the illustrations. Such was the success that it has been decided to give a lantern Sunday night once every month.

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Passion Play Slides Fall Flat.—The representation of the Ober-Ammergau Passion Play, recently given at the Crystal Palace, could hardly be termed a success. The audience expected to see something better than coloured views of pictures, and a set of cinematographic views, which those who had seen the real representation said were nothing like it. It was even asked by members of the audience whether the pictures shown had been taken at Ober-Ammergau or in some one's back garden.

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The Southsea Amateur Photographic Society.—The judges selected to judge the works in the thirteenth annual exhibition of this society, which is to be held on January 29th, 30th, and 31st, 1901, are Messrs. Snowden Ward, H. Simmonds, and W. West. All particulars of exhibition and entry forms may be obtained from the Hon. Secretary, Mr. Gilbert Wood, 10, Pelham Road, Southsea.

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Triple Lantern Effects.—As an evidence that really first-class triple lantern effects are still very popular, and are thoroughly enjoyed, we have only to mention that Mr. C. W. Locke has for the past eight or nine months been filling an engagement at the Egyptian Hall, Piccadilly, where his effects are greatly admired. He is still showing twice daily, and has in preparation a novel Christmas programme in connection with Maskelyne & Cook's entertainment at the above hall.

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C.I.V. Procession.—Hardly had the banquet for the returned C.I.V.'s commenced than cinematographic films, showing their march through the City, were ready for exhibition. The series of films issued by the Warwick Trading Company, Limited, Messrs. Harrison & Co., and Messrs. Butcher & Son, are excellent.

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"An Hour in the Australian Forest."—A few days ago a good lecture was given at Steinway Hall, W., by Miss Darchy, who is an Australian journalist. Both the lecture and slides were of high class, and the audience were delighted.

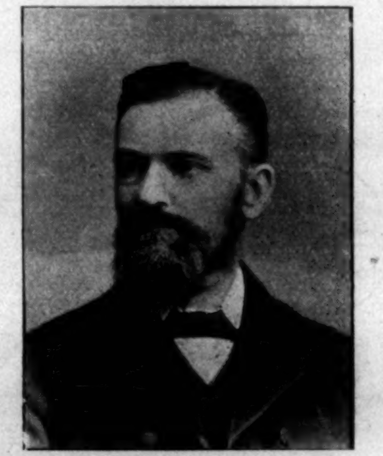
We take this opportunity of informing our readers that the Index for the year now closing will be published with next issue, and have pleasure in wishing all "A Merry Xmas."

Prominent Men in the Lantern World.

No. XX.—MR. ALEXANDER GUNN.

MR. ALEXANDER GUNN, who is a very prominent man in Melbourne and other places, is also a prominent man throughout the Colonies in connection with lantern work. He is one of the District Chief Rulers in the temperance cause, is a J.P., and one of the leading authorities in Australia in connection with lanterndom.

He was born in Glasgow, and when six years of age emigrated with his parents to Geelong and went later to Ballarat. Here, when he entered his teens, he was apprenticed to an engineering firm. This calling he pursued for some twelve or more years, then he saw his way clear as an estate agent in South Melbourne, which pursuit he followed with success for many years. Since 1886 he has been more intimately connected with optical work, and his high-class lantern exhibitions are known all over the country. At his lantern depôt at 242, Little Collins Street, Melbourne, his shop front is of commanding appearance and his stock of optical goods is both plentiful and up-to-date.



Mr. Gunn's early engineering training has been turned to good account, and he is the inventor and patentee of several apparatus connected with lantern work. One of his first inventions, viz., an apparatus for generating oxygen as required, has for a long time been filling the long-felt want in Australia. Having conducted numerous experiments during the early days of the acetylene light (not, however, without sundry mishaps), he finally got a generator to answer his purpose, and this, too, is very popular. Although Mr. Gunn introduced this form of lighting to the railway officials, have been spoken of as a "trick film." This, he explains, differs from a "fake" inasmuch as the general understanding of a "fake" film is that of producing a film of a counterfeit representation of an actual event, such as has been practised extensively with South African war subjects, many of which were made in the suburbs of London, besides France and New Jersey, U.S.A. We may here say that no "fake" subjects of the war have been issued by the Warwick Trading Company, all theirs being actual photographs taken at the occurrence of the various events in Africa. Of "trick" subjects, such as we alluded to in last issue, they, however, publish a splendid collection.

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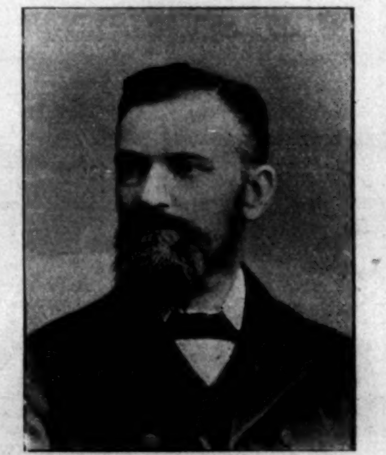

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Gunn's Federation limelight jet is much employed by lanternists. This jet is provided with a large mixing chamber, the part connecting the nipple with the mixing chamber being of a peculiar trumpet-shaped formation. This jet, although held on a tray pin in the usual manner, has also means provided near the mixing chamber whereby it can be further steadied.

A special feature has been made of keeping a good supply of animated picture projectors, and as for ordinary slides every subject one can think of can be obtained practically at a moment's notice. In fact, Mr. Gunn is a wide-awake man who never lets grass grow under his feet. Next year it is his intention to take a holiday and visit this country. We have pleasure in submitting a portrait of this prominent Australian lantern worker.

* * *

Silhouette Slides.
By- Theodore Brown.
No 20.
The Tumblers.

IT has always been my method in the mechanical silhouette slides, the construction and action of which have been described in this series, to take as subjects things of common every-day occurrence, or to give representations of actions and incidents with which everybody is, more or less, familiar. It is better to do this than to attempt to represent some elaborate scene in a necessarily imperfect manner, and a scene or incident that is, moreover, rather out of the way. At all events, experience of various audiences endorses this fact, that they appreciate the exhibition of a slide that deals with a simple theme and deals with it in a fairly perfect manner much more than the exhibition of one whose subject, whilst being more pretentious in its nature, is less familiar and imperfectly worked out.

The present mechanical slide, then, deals with a simple, well-known subject, but it may be made very effective in its working. It represents two acrobats or tumblers, one of whom turns a double somersault over the other in the air. He then turns a double somersault backwards, and lands in his original position. By a little manipulation on the part of the operator he may be made to alight on the back of the second tumbler, and very life-like effects are thus produced.

With regard to the framework. This is very similar to that used in the other slides described in this series, and in fact, in most mechanical slides, so it will not be necessary to give a description of it. Two glasses are used, one fixed and the other movable. The method of preparing the fixed glass will be described first, as this is the simplest part of the work.

On its interior surface are painted in black, or any desired colour, the form of the stooping acrobat P (Fig. IV.), and the background of applauding spectators. It is specially important that the rail of the balcony should be painted in dead-black, as it serves to hide from the view of the audience a string which is stretched across the fixed glass. A mask is fastened to the interior surface of the fixed glass, as shown in Fig. IV.

Two small blocks, J, J (Fig. IV.), are glued to the framework between the two glasses (as shown in Fig. IV.). Between them is stretched a thin but strong thread. This thread is hidden from sight by the rail of the balcony, on a level with which it extends.

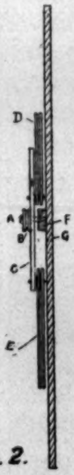


Fig. 2.

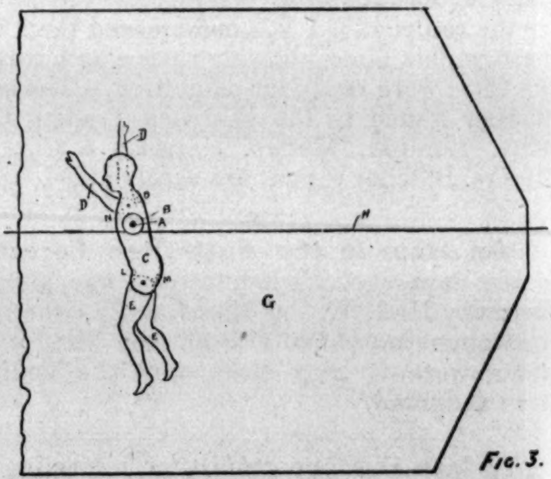


Fig. 3.

We come now to the fitting up of the movable or sliding glass G (Fig. III.). Inasmuch as it bears the acrobat or tumbler who turns the somersaults, it is by far the more important of the two.

The parts of the tumbler—his body, arms, and legs—are cut out of thin metal, say brass or tin. The shapes of these parts are clearly shown in Fig. III. Upon the body are left small tongues or projections of metal, which are bent up at right angles to the body, and serve to keep the arms and legs from falling too far and assuming impossible attitudes. Their positions are indicated by the dotted lines, L, M, N, O, Fig. III. To the centre of the acrobat's body is fixed a small wheel, B, Figs. II. and III. A block F, about the same size as the wheel, is glued to the interior surface of the glass. This block answers as a support on which the acrobat revolves, turning on the screw A, passing through the wheel B, and fixed to the block F.

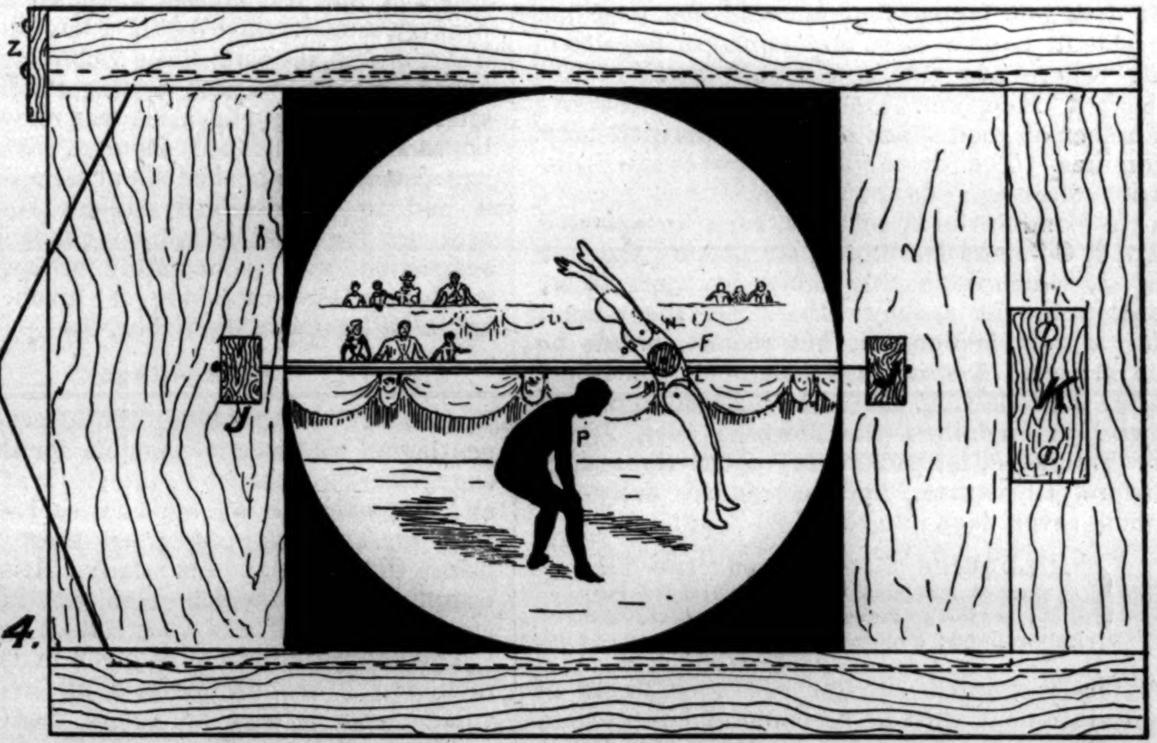


FIG. 4.

It will, of course, be understood that the limbs of the tumbler are pivoted in their respective positions to his body, and are kept from touching each other by means of small washers. To be perfectly plain, one washer separates the two arms, and one the two legs.

The tongues, L, M, N, O (Fig. III.), must be sufficiently long to keep both pairs of limbs from falling too much out of place.

It will hardly be necessary to remark that Fig. II. is a side or end view of the movable glass, with the acrobat mounted upon it.

The movable glass is now inserted in the framework, in the groove prepared for it, and the string that is stretched between the two blocks J, J, Fig. IV. (and which is left sufficiently slack for the purpose), is wound once round the wheel on the acrobat's body.

Two blocks K, Z (Fig. IV.) serve to limit the play of the sliding glass.

The slide is now ready for exhibition in the optical lantern. The sliding glass must be pulled out before the slide itself is inserted in the lantern, and the tumbler will then be seen standing behind the other, who is stooping, in a position ready to make his leap into the air. The sliding glass is now pushed in as far as it will go. This will cause the tumbler to be turned completely over twice in rapid succession, and he will land upon the other side of the stooping acrobat.

It would be rather superfluous to explain in many words how the tumbler is made to turn over. The drawings and previous statements must have made that perfectly clear. It will therefore be sufficient to say that as the sliding glass is pushed in, the wheel fastened to the tumbler runs along the string and so causes the double revolution of the acrobat. By stopping the glass half-way the effect of one tumbler alighting on the other's back may be obtained, but care must be taken to regulate the distance properly, or the absurd and impossible effect of a man remaining in mid-air, with absolutely no support of any kind, will be the result.

A Profitable Christmas and New Year's Occupation.

By THOMAS BYFORD.

AT Christmas time and right into the New Year there is a great demand for lantern entertainments suitable for children's Christmas and New Year parties. Of late years the business has increased by leaps and bounds, and those not in the know can scarcely realise the big trade which is done in this particular line at the festive season of the year.

London, of course, is the place in chief; but it does not follow that because one does not reside in London it is impossible to engage in it. There are openings in all parts of the United Kingdom, more especially where a number of good class people reside with large families. The demand in some country districts often exceeds the supply.

In London the large firms, such as Spiers & Pond, Co-operative Stores, etc., secure the bulk of it, which is mostly sublet by them to an entertainment agency; therefore, the chance for a new beginner is but remote, unless he advertises. A small advertisement, something after the following, should be inserted in one or two London dailies (the *Morning Post*, *Times*, or *Telegraph*, for preference) about three days before Christmas, and continued daily for about seven days into the New Year:—

> CHILDREN'S Christmas and New Year parties attended by an experienced lanternist; entertainment very humorous and strictly refined; circular on application.

A nicely worded circular and programme of entertainment must be prepared and printed in an effective but not elaborate style. Sometimes it is possible to obtain engagements from the entertainment agencies and libraries, but the pay in most cases is small; therefore, it is better to strike out for oneself, and secure the prizes first hand.

In provincial towns an advertisement in the local newspaper is necessary. Circularise the better class residents likely to have children's parties. Also endeavour to have one or two circulars posted up in the windows of the prominent shops, and in the windows of private houses abutting on the road. The local shopkeepers will recommend and book engagements amongst their customers on commission, say 10 per cent. Do not on any account exhibit for a less sum than a guinea; about £1 5s. is a good average charge, which should include travelling expenses within three miles. Beyond that distance extra must be charged for travelling. To charge a low sum means the show being despised, for when a thing is cheap human nature imagines it to be inferior. The entertainment should last about 70 minutes, and as much laughter as possible must be got out of the juvenile audience, which means a forerunner of future engagements and, best of all, recommendations.

In towns and outlying districts it is possible to arrange three shows an evening, or at various times during the day. The following is a case in point:—Many years ago the writer was touring through a county in the West of England, and was booked to appear at a remote country school one evening early in the New Year, and in the immediate vicinity was a large house simply alive with visiting children. Soon after arrival an engagement was offered at this house for the following evening. As a special engagement was booked about 20 miles distant, it had to be declined, unless it could be arranged for 10.30 the following morning, which suggestion was immediately accepted. After exhibiting and partaking of lunch, and one and a half guineas the richer, the **next village** was reached about 3.30 in the afternoon. The gentleman who was responsible for this special engagement requested an interview at the hall, and on putting in an appearance it was asked that an exhibition be given there and then before the squire and his family. His wish was complied with, which resulted in another guinea and a half and an excellent tea.

The entertainment to be given in the schoolroom at 7.30 was for one and all living in the village, and it was, as before mentioned, an engagement on special terms. Not a lump sum, but 4d. each person was to be allowed, adults and children combined. They were to be admitted by ticket, which was to be retained and exchanged for the coin of the realm the following morning. Exactly 220 put in an appearance, which resulted in a return of £3 13s. 4d., or £6 16s. 4d. for the day's work, which was, as far as the writer is concerned, a record day.

It is possible to give these entertainments at all seasons of the year. If one resides in a town, it soon becomes known far and wide that an entertainer of the right sort dwells therein; and country people, being somewhat conservative in their ideas, will not go beyond their own kingdom for that which can be got within.

The programme for children's parties must consist of humorous slides. For adults and children something more solid must be submitted, in the proportion of 80 per cent. of humour and 20 per cent. of solid but interesting matter. In London and the provincial towns an incandescent gas lantern may be used. It is so easily connected, and has the advantage of being cleanly and not cumbersome. In remote places where there is no gas, Stocks' paraffin oil lamp is recommended. The very best oil should always be obtained, and Stemp's patent wicks are excellent.

A 6 feet screen is large enough for parties. In schoolrooms 10 or 12 feet screens should be used.

It will be necessary to add fresh slides as the business grows. The old stock can easily be exchanged for others, or sold at a slight loss and new purchased.

The advantage of this business is that it grows annually. If the returns are not quite up to one's expectation the first year, do not despair; experience and engagements will have been gained. With but little trouble or loss of time a nice sum may be netted annually—a thing not to be despised in these days of keen competition.

* * *

Further Use of Reducers.

By T. PERKINS.

IN the November issue of the OPTICAL MAGIC LANTERN JOURNAL I showed how the two reducers—the Howard Farmer and the persulphate of ammonia—enable us to convert slides which after fixation seem of no value, into really good transparencies which will show well on the screen, but there is another method of using the former reducer which may occasionally be resorted to with good effect. This I will proceed to describe.

To illustrate a lecture I am preparing for the present season on "Rouen and its Churches," I desired to make a slide showing, on a large scale, the upper part of the central tower of the Abbey Church of St. Ouen, the "Crown of Normandy" as it is sometimes called. The wealth of carving and the delicate detail of this tower could not be brought out by printing by contact from any quarter-plate or half-plate negative in my possession, so I resolved to make a contact slide from a 12 by 10 negative I had taken of the church. Unfortunately, however, this part of the negative was backed up by a cloud, effective enough when a paper print is made from the whole negative, but which in the slide rendered the background heavy. To use the ferridcyanide reducer generally would have had the effect, not only of removing the cloudy background, but also of destroying some of the general detail, so I devised another method of applying it. I removed the superfluous moisture from the slide when taken from the washing water with fluffless blotting paper, and mixed a somewhat strong solution of the reducer. This I applied locally with a camel hair brush and lightened to a certain extent portions of the sky to give the effect of clouds, but not satisfied with the result, I determined to introduce some still higher lights. The plate was well swilled, and the moisture was again sopped up with the blotting paper. I poured out a little of the saturated ferridcyanide solution into a cup, then dipped the brush in the hyposulphite fixing bath, shook out the superfluous solution, thus bringing the brush to a fine point. Then I just dipped the point in the strong ferridcyanide, and proceeded to outline the

edges of the clouds.

The strong reducer at once removed the deposit from the film, so that the high lights were as clear as bare glass. As the surface of the plate was free from all superfluous moisture, and very little of the strong solution was used, the reducer did not run, and I was enabled to obtain lines of light clear yet free from hardness.

It is manifest that this method of procedure may be adopted in many cases, sometimes to increase the brilliancy of any portion of a cloud already shown on the transparency, sometimes to introduce a point or line of light in a uniformly dark sky, or even to give a brilliant light to some object in the landscape. We may have a landscape, for instance, taken on a dull day. The sky may be uniformly dark and the general appearance of the slide heavy, but if a few horizontal bars of light are introduced above the horizon, we can give the effect of a view taken just after sunset, when the bright sky is seen through breaks in the clouds that hang about the west, and the effect will be true to nature, since the light from such a break in the clouds is not sufficiently strong to throw any shadows across the landscape portion of the picture.

The slide maker who is possessed of some artistic taste and skill may by reducing with a moderately strong reducer the upper portion of the uniformly dark sky (which may, if desired, be artificially darkened by a process similar to that known as "sunning down" in printing on paper) leave cloud masses of any desired form above the horizon, and then by outlining the edges with a fine brush charged with the saturated solution of ferridcyanide as described above, produce the effect so beautifully described by Tennyson in "In Memoriam XV." of the cloud that

> "Topples round the dreary west,
> A looming bastion fringed with fire."

If the slide, either by development or by subsequent toning, is rendered in a suitable colour, the result will be very fine.

It may be said by some that these methods are not purely photographic, and may be therefore condemned as illegitimate; but I think that the days of absolute purism are over, and as our pictorial photographers resort to all manner of dodges—double printing, sunning down, shading certain portions of their negatives while printing, applying matt varnish and scraping it off where needed, stumping, or chalk or blacklead, etc.—we need not hesitate to use any methods that we can devise to introduce pictorial effects into our lantern slides. The long dark evenings of winter are upon us now, and the manufacture of lantern slides and the improvement of them by various dodges will be interesting work; and the adoption of these devices will make a pleasant change in the monotony of the work of simply printing and developing transparencies for the lantern in the ordinary way.

Calcium Carbide at the Congress of Applied Chemistry.

AMONG the papers read at the International Congress of Applied Chemistry, recently held at Paris, those relating to the carbide of calcium industry and the production of acetylene were of great interest. The present development of the carbide industry in Europe was shown by a series of papers read by different delegates, each of which described the carbide plants of one of the leading countries. M. Minet, in his opening paper, in which he treats electrochemical processes from a historical and an industrial point of view, mentions the carbide industry in a general way, and gives a *resumé* of the installations in Europe. The paper read by M. Gin gives some interesting details as to the development of the carbide industry in Austria-Hungary, where the abundance of waterfalls has led to the establishment of a considerable number of carbide plants. At present seven large plants are in operation, and the total water-power used is about 24,000 horse-power. A number of projects are shortly to be put into execution, which will bring the total up to nearly 80,000 horse-power.

The largest of these works, from the point of view of capacity, says the *Scientific American*, is that of Jaïce, which has been erected by the

Bosnian Electric Company,

the large falls of the River Pliva are here utilised. The river widens into a lake, which discharges into a lower lake in a series of cascades. The dam has been placed shortly below the mouth of the upper lake, where the water is taken off in a canal about two miles long; the canal passes through 15 tunnels of 12 by 15 feet section, and ends in a large reservoir near the station. From this point the water is brought to the turbines by two iron conduits of 5 feet diameter. The capacity of the hydraulic plant is about 9,500 horse-power. Eight turbines are installed in the station, of 1,000 horse-power each, connected to Schuckert dynamos. The electric furnaces for this plant have been installed by the latter company. The plant situated at Paternion is of much smaller capacity, but presents many points of interest. It has been installed by the Venetian Electrochemical Society, and is located on the bank of the River Kreuznerbach. The lime is furnished by quarries of limestone, which are found in the neighbourhood. A head of water of 200 feet is obtained from a waterfall in this stream; the water is brought to the turbines by canals and iron conduits to the station, situated at 1,600 feet from the fall. Here are installed three turbines of 400 horse-power each, connected directly to a triphase alternator, working at 350 revolutions. The grinding machines will pulverise 8,000 lbs. of lime and 5,000 lbs. of coke per day. This material is transported to an automatic balance, and thence by a conveyer to a screw mixing tank; from here it falls to the doors of the electric furnaces by a series of conduits. The mechanical operations are carried out by two electric motors. Nine double electric furnaces are used, with space for three others to be installed later; the furnaces have a capacity of 125 horse-power.

The Meran works is one of the most

important plants; it is operated by the Gin and Leleux process. It utilises the water-power of the Esteche, one of the confluents of the River Adige. The fall has a height of about 280 feet. The canal is less than a mile long; it passes in a tunnel for a part of the way, and then two metallic conduits, 6 feet in diameter, bring the water to the turbines; there are five of these, of the Garry pattern, with horizontal shaft. To these are coupled five alternators of 1,200 horse-power each. Of these, two are used for the carbide plant, to which the current is transmitted by two cables in subway and overhead line; these furnish 2,000 horse-power to the plant. A deposit of crystalline marble, very pure, is found near the works. It is carried by an aerial transporter to the calcining furnace. The lime and coke are elevated by a bucket conveyer to the grinders, passing thence to the mixers, and finally by a conveyer to the furnaces. The latter have a capacity of 260 kilowatts each; they are disposed in battery in a large room 35 by 130 feet. These furnaces are claimed to give, per kilowatt day, over 11 lbs. of crystallised carbide.

Among the plants shortly to be erected is that of Petrozeny. The fall of the Szill River here situated belongs to the Acetylene Company of Vienna. It is about 75 feet high at a maximum, and a mean of 4,800 horse-power may be obtained. Another projected plant is that of Almissa, on the Cetina River. This large fall belongs to a syndicate, including Ganz & Company (of Budapest), the Belgium Aluminium Syndicate, and others. The fall is to be obtained by a derivation from the Cetina, using for the purpose a tunnel

five miles in length,

and in this way 50,000 horse-power could be realised. Another fall on the same river is to be utilised by Descovics & Gin, who have obtained the concession; a head of water of nearly 300 feet is assured, which will give 6,000 horse-power. A central station is to be established below the fall, and the energy to be transmitted to the port of Olmissa by the high tension system at 12,000 volts; at the latter point will be located the carbide works.

The carbide industry in the United States was the subject of a paper read by Mr. John A. Matthews, who, after giving an historical *resumé* of the subject, describes the Niagara and Sault Sainte Marie plants, and brings out the fact that the former works turn out most of the carbide consumed in America. He gives the selling price of carbide as varying from 70 to 90 dollars per ton, and estimates that it requires 300 horse-power for 24 hours to produce a ton of carbide. The cost per ton he estimates at 38 dollars. The carbide produced at Niagara is guaranteed to give 5 cubic feet of acetylene per lb., but the production of gas is usually greater. Mr. Matthews says that acetylene lighting is being extensively introduced in the Western States.

Another interesting paper was that read by M. A. Rossel, upon the state of the industry in Switzerland. Up to the time of the discovery of carbide of calcium, hydraulic power was but little used in that country, and there were only two important electro-chemical works, that of Neuhausen, which utilised a part of the fall of the Rhine for the

production of aluminium,

and the Vallorbes plant, making various electrochemical products. The first carbide was made in the latter works, and soon after the Neuhausen plant followed its example, as also the Luterbach works. From this point the carbide industry developed rapidly, and a large amount of capital was obtained for establishing hydraulic plants for this purpose. The Neuhausen Company greatly increased its plant, and erected that of Rheinfelden; Siemens & Halske, with the Wyman Company, installed a carbide works at Lagenthal, etc. M. Rossel then gave a short account of the leading plants. The Neuhausen works use hydraulic power to the extent of 2,000 to 2,500 horse-power, from the fall in the Rhine. A part of the energy is utilised to generate direct current, and another part for alternating current on the two-phase system. Both aluminium and carbide are produced at these works, which are in active operation. The Veriner factory takes its energy from the large hydraulic plant at Chèvres; it utilises about 7,000 horse-power in the shape of two-phase alternating current. The primary tension is 2,000 volts, and a series of transformers reduces this to 200 volts to operate the furnaces. There are thirteen of the latter, twelve using 500 horse-power and one of 1,000 horse-power. The Langenthal works was destroyed by fire on June 5th last. It was erected in 1897 by Siemens & Halske, and operated by them in conjunction with the Société Electrique de Wynan. The station at the fall produced triphase alternating current at high tension, which was brought by overhead line to the carbide plant, 4 miles distant; it was transformed here to 45 volts and 3,000 amperes by three transformers.

The three furnaces installed here produced about 500 tons of carbide per year. Another large plant is that established on the River Lonza, at Gampel, utilising two of the falls of that river. The first fall has a head of 350 feet, and operates five turbines of 500 horse-power each, direct-connected to low-tension alternators, while the second fall, of 680 feet, drives ten similar turbines with high-tension dynamos; the two-phase system is used. The first fall gives 2,500 horse-power, which is all utilised for the production of carbide; the second fall gives 5,000 horse-power, and one-half of this energy is used for the same purpose. M. Rossel describes a number of other plants, including that of Vernoya, with turbines of 4,500 horse-power, 900 of which is used for carbide; Thusis, using 3,000 horse-power, with twelve furnaces of 250 horse-power; the Nidau plant, disposing of 5,000 horse-power, and using 1,800 for carbide, etc. In the second part of his paper M. Rossel speaks of the raw material used. Limestone of very good quality is found in Switzerland, which gives lime of 99 per cent. purity, and containing no trace of phosphoric acid. The carbide delivered to commerce is guaranteed to give 4·8 cubic feet per lb., but generally it exceeds this by 2 to 5 per cent.

Ethics of Lanterndom.

By D. TURNER.

WHAT nonsense! Rubbish!! Who ever heard of such!!! Ah! but stay your exclamations and remember "There is an ethical side to all things." And among the thousands of things are found music, sculpture, painting, astronomy, physics, physiology, natural history, electricity, chemistry, photography. The arts and sciences generally, any one, all of them, together with others too numerous to detail, play important parts in the arena of lanterndom. Rob any main factor, or science, or study, of the right of entrance to this arena, it becomes, as it were, outside the radius of advancement; it loses part of its clothing, its progress is impeded, it is all but dead, its *morale* becomes a dead letter. This robbery is but a surmise, it could never happen.

Lanterndom has built up and is still building, developed and is still developing, and perfecting all that is great, all that is grand, all that is noble, all that is good, all things worthy of the name of study, and in this year of grace, 1900, few, if any, studies are attempted outside its curriculum.

And it came about in this way.

Our earliest recollections will no doubt bring to our minds associations of the old nursery at home with its toy cameleon top, its toy wheel of life, its toy kaleidoscope with its shifting crossings of green and gold, its toy camera obscura, its toy camera lucida, its optical marvels and delusions, and lots more. Then the nursery literature, the fairy tales ever foremost. What a wonderful chap "Jack, the giant-killer" was. What a little angel we thought the child-girl "Cinderella." Her wonderful godmother, too, who couldn't have kissed both of them. "Jack and the bean-stalk," the rapid growth of the latter, surprising the minds of thousands of the juvenile fraternity. Next came Grimm's goblins, displaying to our mental vision all that was ghostly and

ghoulish and demonlike.

"Gulliver's Travels" were the most magnified dreams imaginable. The fables, too. Who doesn't remember the fables? Fairy-like, perhaps, but cram full of truths, of solid hard facts of yesterday, to-day, and to-morrow. It was in the nursery, too, that the nurse-tutor gave the reading lesson, short and to the point. Two specially crop up in the memory analogous to our subject. First, Humphrey Davy working in a garret, inventing his safety lamp, which lamp was the means later of his name being inscribed on the historical scroll. Davy was puzzled—and he wouldn't have done what he did if he hadn't have been—and groaned "Oh, that this were a *magic lamp*, and do as I bid it." Again, an incident in the travels, adventures, and explorations of the bare-footed factory lad, afterwards Dr. Livingstone. "The tribes were most troublesome," so read the nurse, "I knew not what to do to subdue their savagery, and did not want to use force, when suddenly, as if by witchcraft, I thought of my magic lantern, and hastened to unpack. In a very short time the noises ceased. Men, women, and children were held spell-bound. They were captivated, I had won, and before many more hours had passed they who had thirsted for my blood and the blood of my followers worshipped me now as their god. They helped me in every way, did what I bid, some accompanying us for some days." So the nursery was—and is—responsible for the first introduction to lanterndom. The first charm was there set, the first steps of interest were there taken, interests that were foundations of morals that were clutched at.

Next following we get into the school-house and the college. The white screen in a marked degree takes the place of the blackboard. The history lesson joins hands with the geography lesson. Yesterday it was China and the Chinese, to-day it is Lapland and the Laps, to-morrow it is to be the Russian capital.

And whilst the teacher dwells upon this, that, and the other, they pass before us in life form. Their costumes are made known to us, their houses, buildings, modes of living are before us, and when we sit in the evening to write out an essay on the day's work, there's a something engraved on the memory that makes the task less difficult than it formerly was. The science master, too, makes his hard facts soft and easy. The lesson is "Electricity and Magnetism." We are shown the action of the acids upon the battery poles; we see, too, a magnified galvanometer at work, on the screen. We grasp the subjects readily. The study of the gases seems to come naturally, for the reason that we boys take the working of the lantern in turn. We once thought the scope of lanterndom great and now know it to be greater. The school-house is closed to us now, we have left it behind and drifted into the waters of commerce.

Some large manufacturers in lace have an apartment set up specially to show their patrons their latest designs, which is a better way than all the pattern books in Christendom. Manufacturers in wall papers, coloured cotton printing, and other fabrics where design and the blending of colours are an essential, make free use of the chromatrope, and owe it much for producing endless series of designs.

The morals of lanterndom are good.

The Optics of Trichromatic Photography.

The Traill Taylor Memorial Lecture.

THE third annual Traill Taylor Memorial Lecture was given at the headquarters of the Royal Photographic Society on the 16th ult. Mr. T. R. Dallmeyer, who was in the chair, after making some graceful and kindly remarks pertaining to the late Mr. J. Traill Taylor, introduced the lecturer, Mr. F. E. Ives, who, he explained, had journeyed from Philadelphia, U.S.A., for the special purpose of giving this lecture. A large audience was in attendance, and at the termination of the lecture the chairman handed Mr. Ives the Memorial medal for the year.

Mr. Ives said:—

The search for a direct method of pigmentary colour photography, such as was dreamed of by the fathers of photography and the world at large, appears to have been practically abandoned, every seeming clue to such an achievement having proved a delusion. Nevertheless, so much has been accomplished in the direction of practical colour photography by indirect methods, that the subject has become a very large and important one, and so specialised that it would be impossible to do justice to it in a single lecture, or even in a treatise of considerable size. I even doubt if any one man possesses such a full knowledge of both the science and history of this subject as would make him competent to treat it fully, and with absolute impartiality.

This is the more surprising in that every method which has achieved or promises to achieve a notable degree of practical success is based upon the same underlying idea of a composite trichromatic image.

The most that I can hope to do in this lecture is to give such a concise critical review of the history, and science, and mechanism, of these methods as may serve to disclose the conditions of success, and help to clear away some of the lumber of ignorance and misconception which has stood and still stands in the way of general progress.

I have chosen to treat the subject historically, as well as practically, not only because the history of the subject is very interesting in itself, but because by no other means can correct methods be established so well as by critical comparison with incorrect methods, which to the mind of the layman may appear to have been reasoned out with equal logic, and to superficial observation with even greater definiteness.

It is my sincere wish to give full credit to the pioneers of these methods, but at the same time to clear from the path the stumbling-blocks of their errors and misconceptions; for I have observed that the very men who commence and carry forward a great work often leave it encumbered with rubbish which impedes further progress, and which must be cleared away by somebody before the defects can be corrected and the work carried on to perfection.

I have myself devoted many years to trying to clear away the rubbish, correct the mistakes, and supply missing material to bring this work to perfection, and I presume that I may accept the honour of being asked to prepare this lecture as a recognition of my efforts, and a justification for such a treatment of the subject as must have been expected from me, in the light of my past record as a writer upon this subject.

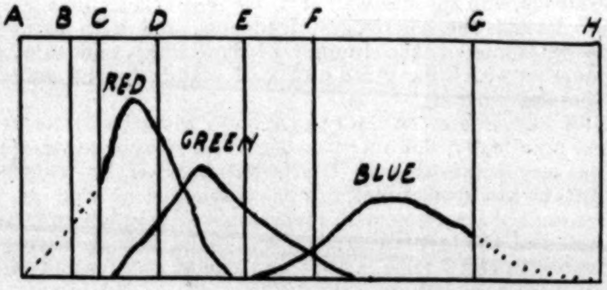
I purpose to begin with a concise statement of the principles of successful trichromatic photography, and to follow with an analysis of the various methods which have been proposed, showing the progress towards the recognition and attainment of the conditions of success, and at the same time the specific defects of each method and device; but, for greater clearness, I shall divide my subject into sections, treating first of the principles of the more important processes, then of the optical and mechanical inventions designed to facilitate their practice, and last of all of special developments of the idea, and the optical devices pertaining thereto.

The trichromatic process of colour photography consists essentially in (1) the production of three photographic images which represent the physiological analysis of all colours into three simple spectrum colours, and constitute a colour record, and (2) synthesis by optical superposition of the three elements of the colour record in the three simple colours, whereby the sensations of all the original colours are reproduced to the eye.

Such analysis and synthesis is possible because there are three spectrum colours, which by admixture in suitable proportions will reproduce to the eye the sensation of every other spectrum colour. These three simple colours are the red of the spectrum, about the Fraunhofer line C, the green near B, and the blue near G.

What particular colours must be employed, and the proportions in which they must be mixed to reproduce to the eye the sensation of the intermediate spectrum hues, was first determined by Professor James Clerk-Maxwell, and is shown by his famous "colour curves," which I reproduce.

These factors have been redetermined by Sir William Ahney, with an improvement upon Maxwell's colour box, but Maxwell's results are shown to be *substantially* correct, and I therefore prefer to use Maxwell's diagram in illustration, because of its historical bearing upon the subject.



Maxwell's curves are *colour-mixture* curves, and not to be confounded with *colour-sensation* curves, which assume a fundamental green sensation which no part of the spectrum excites exclusively. In trichromatic photography we have to deal with mixtures of actual spectrum colours.

The relative height of the respective curves at any point indicates the proportions of the simple colours required to reproduce to the eye the colour of the spectrum at that point.

It follows that in order to obtain a trichromatic colour record of the spectrum itself, three photographs of the spectrum must be made, in each of which the distribution of photographic action is such as would be represented graphically by the respective curve in Maxwell's diagram.

The picture to represent the red element in the analysis must be made not only by the action of the red rays, but by the action of orange-yellow and yellow-green rays, in proportion to the relative amount of red light required to represent the latter colours in the synthesis, by admixture of green; and, as shown by the "red" curve in Maxwell's diagram, the strongest action of all, instead of being in the red, will be in the orange, which is reproduced to the eye in its correct relative luminosity by mixing the greatest amount of red with a little green.

Similarly, the negative to represent the green element must be made by the joint action of orange, yellow, yellow-green, green and green-blue light, with the strongest action in the yellow-green, as shown by the second curve; and the third negative by the joint action of green-blue, blue, and spectrum violet light, as shown by the third curve.

If the distribution of photographic action does not correspond to the form of these curves, the analysis will be imperfect, and correct synthesis becomes impossible. If the yellow of the spectrum does not act in both the red and green negatives, it must be reproduced either as red or as green; and if it acts in both negatives, but not in the correct relative proportions, it will be reproduced either as orange or as yellow-green. To ensure accurate results, the photographic analysis must be a *quantitative* analysis, and a correct quantitative analysis and no other will admit of the synthetical reproduction of the spectrum itself, with all its gradations of colour and luminosity.

All the colours in nature are mixtures of spectrum colours; therefore it may be taken as an axiom, that *the ability or inability to reproduce the spectrum itself credits or discredits any trichromatic process.*

If you can obtain by photography such a colour record of the spectrum as I have described, you can by the same means obtain true colour records in photographs from nature and works of art; but if the spectrum test in any way fails, no real accuracy can be guaranteed or should be expected.

To secure negatives of the required character, we must employ colour-sensitive photographic plates, and filter the spectrum rays through suitable coloured mediums, testing by exposures in the photo-spectrograph and modifying the colour filters until the density curves conform to Maxwell's colour curves. Such adjusted colour filters I term "colour-curve screens." This system of photographic analysis I call "colour-curve analysis," and the photographic records "colour-curve records."

Although there are various methods of synthesis, positive (photo-chromoscopic) and negative (colour prints), the photographic record that is correct for one is correct for the other.

An incorrect colour record cannot be made to yield a correct synthesis by any means whatever.

Positive synthesis may be obtained by making a positive colour record (a transparency) from the negative colour record, and projecting the three images separately in three magic lanterns, each with light of the simple colour which it represents, and all superposed in register to form a single sharp composite image upon the screen.

Lest a most important point be missed, I repeat that the synthesis must be obtained with the simple colours, red, green, and blue, although the records have been made by the action of mixtures of various spectrum colours. Thus, although the record for red is made by the joint action of red, orange, yellow, and yellow-green light, this image must be pure red in the synthesis. Correct synthesis, therefore, demands the use of "pure colour" screens, in contradistinction to the "colour curve" screens pertaining to the process of analysis.

If we were to use the same screens for both analysis and synthesis, the results, in dealing with the spectrum, could not possibly be correct. The reason for this should be evident to any one who has followed my argument, but in a few words I will give one or two illustrations.

Suppose we make our colour records of the spectrum through "pure colour" screens; then only the two ends of the spectrum and a band in the middle will be reproduced, the remaining portions appearing as broad, dark spaces in the synthesis, because such screens transmit none of the intermediate spectrum rays. Suppose, on the other hand, that we attempt the synthesis with the "colour-curve" screens; the simple colours, red, green, and blue, cannot be reproduced, because the respective screens transmit other spectrum colours along with these.

In short, it is absolutely necessary, in order to obtain a true colour record, to photograph through "colour-curve" screens, and correct synthesis is possible only with "pure colour" screens.

It is true it may happen that, in dealing with compound colours, the effects of departure from theoretically correct conditions will not always result so disastrously as in dealing with the spectrum itself; but no reliance can be placed upon any but fundamentally correct methods.

It is also true that the habit of the eye and mind, due to familiarity with monochromatic photographic reproductions, makes some dilution of colour acceptable to most people, but a recognition of the principle I have stated is necessary in order to introduce this dilution without change of *hue*. The dilution must be equivalent to admixture of white light only, and this is most perfectly effected by broadening the spectrum bands which are taken as synthesis colours without materially displacing them.

In positive synthesis we build up our composite colour photographic image by adding light to light, red, green, and blue, as already described; but we may also employ a method of negative synthesis, producing fixed colour prints upon paper or glass, in which case we commence with our white surface, and build up the picture by superposing coloured shadows (transparent colour prints) upon it.

This method is essentially complementary to the other, and the colours of the transparent prints are like the shadows of the corresponding positions in the white field of the triple lantern.

Red, green, and blue, being the colours in positive synthesis, *minus* red, *minus* green, and *minus* blue, or cyan blue, bright crimson, and yellow, are the printing colours.

If our white surface, against which these colour prints are superposed, were a white made by mixing red, blue, and green spectrum rays, no further definition of the printing colours would be necessary. Inasmuch, however, as our white is ordinarily made up of all the spectrum rays, it becomes necessary to consider the absorption of the colours in the intermediate spectrum regions.

The function of the printing colours is to most efficiently subtract from *ordinary* white light the visual impression belonging to the respective simple colour elements. In other words, the printing colours as seen in *ordinary* white light should appear to match as nearly as possible the *minus* (shadow) colours which may be produced in the physiologically white field of a device for positive synthesis.

This would not be accomplished by absorptions complementary to the correct photographic action, for the reason, for instance, that a *minus* red (C line) is considerably more antichromatic to the red element than a *minus* yellow (D line), although the yellow is more active than the red in the production of the respective negative, in accordance with Maxwell's curves.

I will give one practical illustration. The absorption of the dye cyanine is in approximate concordance with the Maxwell red curve, and, when it is used as a colour sensitiser on a suitable photographic plate, it yields a density curve also pretty close to the Maxwell red curve; but this colour, in ordinary daylight, is no more like our *minus* red than cobalt-blue glass is like signal-green.

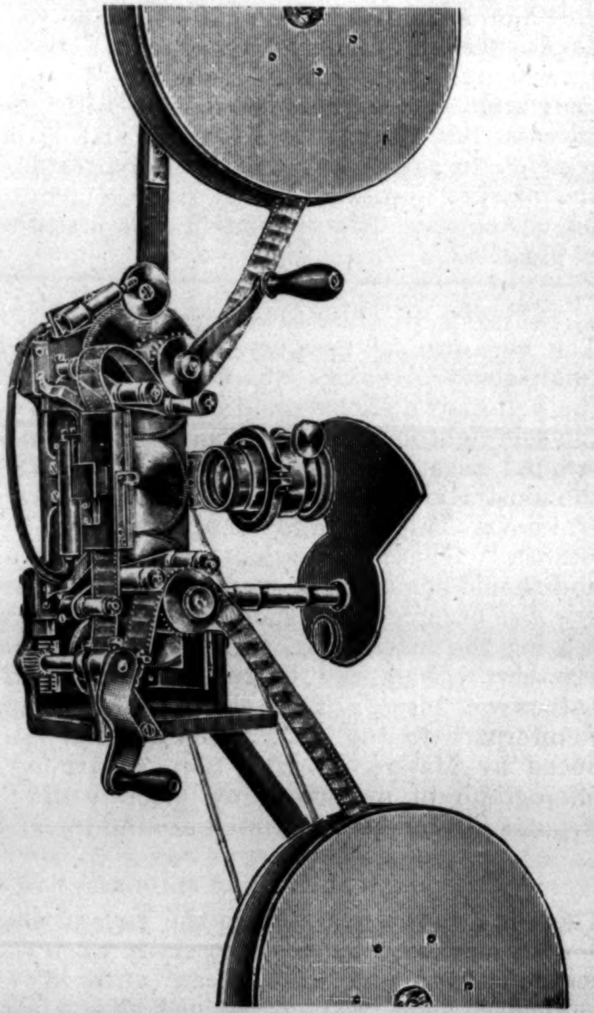
The relative efficiency of the absorption falls as we go towards the next "primary" in the spectrum, because it involves simultaneous damping of the visual impression of that other "primary."

(*To be continued.*)

NEW APPARATUS.

PRESTWICH PROJECTOR.

In the new cinematograph projector lately introduced by the Prestwich Manufacturing Co., of 744, High-road, Tottenham, there is a very ingenious method of ensuring that the pictures shall appear in the correct relation to the mask. Some instruments are so arranged that the mask is made to move upwards or downwards, but this occasions a dodging about on the screen, whereas with the method adopted in the instrument in question, the mask or aperture remains stationary and the film itself is shifted. At the lower part of the illustration a small crank handle will be seen, this controls



the position of the sprocket wheels with relation to the mask, which is thus enabled to be stationary. In this manner the exact framing of the pictures can be assured quickly and without trouble, even whilst the machine is running.

APPARATUS IN CONNECTION WITH ACETYLENE LIGHTING.

Those who patronise the acetylene light in its varied forms will doubtless be glad to know that Mr. R. J. Moss, of 98, Snow Hill, Birmingham, can supply them with any generator or fitting that has been placed upon the market, his business being that of an expert and dealer in acetylene fixtures. Those who may have difficulties in this direction will do well to consult him, as he has had an extended and varied experience in this special branch. Several inventions of his own, including a special generator and burner, have met with great success, but he has broad ideas and is in a position to supply any acetylene apparatus on the market according to the requirements of his customers. His opinion in such matters is of great value.

SLIDES OF THIBET AND NEW GUINEA.

The new firm of Sanders and Crowhurst, 71, Shaftesbury Avenue, W., has obtained from the well-known publishers, Fisher, Unwin & Co., the sole right for making lantern slides from the original negatives which were used in making the illustrations in the popular works, "Through Unknown Thibet," and also "Through New Guinea." These illustrations are full of interest, and should command a ready sale. The same firm has brought out a slide which is of interest bearing the inscription, "Old Stay-at-home," together with a well lighted photograph of a half-crown piece. This slide forms a good counterpart to the slide sometime ago introduced by Messrs. York & Son, containing a photograph of a threepenny piece with "A Regular Church-goer" printed around it.

MECHANICAL EFFECT SLIDES.

There is a charm in watching the general effect of good mechanical slides, especially when they emanate from one who is an authority in producing such. Some of the new effects introduced by Mr. Edmund H. Wilkie, 114, Maygrove Road, West Hampstead, N.W., are almost beyond description. We will, however, endeavour to give some details of two.

THE HIDDEN TERROR.—Submarine warfare—Dawn on the ocean with a small ironclad in the distance, on the right side of the picture the submarine boat enters floating half submerged. On reaching the centre of the picture they sight the ironclad (which grows slowly more definite by special movement) and the submarine boat sinks below the water, leaving only the tops of the conning towers visible above the surface. Going in chase of the ironclad it is gradually lost to sight in the obscurity of the depths of the ocean. The picture then suddenly changes, a terrific explosion fills the centre of view, which passing off discloses the ironclad on its beam ends about to plunge into the abyss below, the result of the explosion being seen in clouds of smoke, steam, and sparks.

THE GRAND ILLUMINATIONS OF THE CHATEAU D' EAU PARIS, 1900.—The building by day changing to night with the outlines defined by coloured electric lamps, the stone being tinted by their soft glow. Fountains in the foreground are seen to play, the water rising and falling while continually changing colour. The great veil of water from centre of building is seen falling, while miniature cascades are in motion from the many basins, with grand chromatic effects.

DOUBLE WEIGHT VELOX.

Velox paper is capable of yielding beautiful prints, and that known as double weight requires no mounting, the emulsion being coated on substantial cardboard. Exposures may be made either by daylight or by the light of an ordinary lamp or gas. In order to obtain the correct exposure, it is well to use a small piece of paper as atest, for when printed no image can be seen until after development. The developer recommended by the sole British agents, Messrs. Griffin & Son, of Sardinia Street, W.C., is as follows:—

Water	10 ounces.
Metol	7 grains.
Sodium Sulphite, crystals, pure	½ ounce.
Hydroquinone	30 grains.
Sodium Carbonate, desiccated (or 400 grains of crystallised carbonate.)	200 grains.
10% Bromide of Potassium solution, about 10 drops.	

NOTE.—In England, Canada, or wherever the "British Pharmacopœia" is official, use 150 grains of the desiccated Sod. Carb.

This developer can, if desired, be applied to the prints with a brush while the print lies face upwards on a piece of glass plate. After development is complete the prints should be dipped into clean water for a second or two and immersed in the following fixing bath, after which they should be washed in running water for about an hour.

Hypo	16 ounces.
Water	64 ounces.

Then add the following hardening solution:

Water	5 ounces.
Sodium Sulphite Crystals	½ ounce.
Commercial Acetic Acid (containing 25% pure acid)	3 ounces.
Powdered Alum	½ ounce.

With the hardening solution this mixture keeps perfectly clear and can be made up at any time in advance.

KAMMOGRAPH.

About a year ago an American firm (Anthony & Co., of New York, we believe) introduced in the United States an instrument of the cinematographic type in which the pictures were taken on a circular plate of glass, the series of pictures being in spiral form. An instrument of somewhat similar style has made its appearance in this country during the past few weeks under the name of the Kammograph.

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PATENT INTELLIGENCE.

The following List, relating to current Patent Applications, is compiled expressly for the "Optical Magic Lantern Journal" by W. P. Thompson & Co., Patent Agents, of 322, High Holborn, London, W.C., to whom all enquiries for further information should be addressed.

No. RECENT PATENT APPLICATIONS.

18297. 15th October, 1900. John Wilkinson and Alfred Wilkinson. Improvements in photographic printing frames.

18363. 15th October, 1900. Augustus Rosenberg. Combined cinematograph and ordinary hand camera.

18364. 15th October, 1900. Augustus Rosenberg. Improvements in cinematographic apparatus.

18367. 15th October, 1900. Andrew Ainslie Common. Improvements relating to the focusing of telescopes.

18517. 17th October, 1900. Henry Milborne Selfe. An optical instrument.

18535. 17th October, 1900. Carl Paul Goerz. A new or improved device for changing photographic plates or films in daylight. (Complete.)

18585. 18th October, 1900. John Wilkinson and Alfred Wilkinson. Improvements in photographic printing frames.

18662. 19th October, 1900. Albert Van Hoorn. Improvements in photographic print washers.

19108. 25th October, 1900. Kodak, Limited. (Mathias J. Ehlman, United States.) Improvements in or relating to photographic film cartridges and the like.

19331. 29th October, 1900. Alfred Watkins. Improvements in photographic actinometers.

19396. 30th October, 1900. James Wyndham Meek. Improvements in apparatus for developing photographic films.

19465. 31st October, 1900. Emil Hochstrasser. Improvements in photograph dark chambers.

19487. 31st October, 1900. George William Brown and George Robson Beaumont. An improved apparatus for exposing and covering lantern slides in the magic lantern.

19694. 2nd November, 1900. John Track Sandall. An improvement in photographic film cartridges.

19800. 5th November, 1900. Abram Kershaw. Improved photographic camera.

19860. 5th November, 1900. Julius Graefe. Improvements in the production of mounts for photographs and other pictures.

19884. 6th November, 1900. Charles Anthony Burghardt, Christian Gustav Warnecke, and William Henry Heath. Improvements in the method of and means for exposing and changing rolled film in photographic cameras; also applicable to colour photography.

19908. 6th November, 1900. Charles Scott Snell. Improvements in lanterns used for illuminating purposes.

19925. 6th November, 1900. Frank Albert Roebuck. Improvements in photographic shutters.

20007. 7th November, 1900. James Glossop. An improved parcel carrier for bicycles, specially applicable for carrying photographic cameras.

20011. 7th November, 1900. Hedley Heywood. Improvements connected with stereoscopes or similar instruments for holding and discharging stereoscopic views, and for adjusting purposes.

20015. 7th November, 1900. John Edward Thornton. Improvements in cameras, roll holders, and film spools.

20052. 7th November, 1900. Frederick Thomas Parsons. Improvements in photographic developers.

20180. 9th November, 1900. Robert William Shipway. Improvements in apparatus for supporting photographic cameras when in use for taking photographs.

20195. 9th November, 1900. Hugh Somerville Morgan. Improvements in developing baths for photographic purposes.

20226. 9th November, 1900. Henry Percy Tattersall. A sliding movement for focusing the lenses in cameras.

20230. 10th November, 1900. Edward Marshall Rosher. Portable photographic plate washing and draining rack.

Copies of the following specifications may be obtained by remitting 1/- for each specification to W. P. Thompson & Co., Patent Agents, 322, High Holborn, London, W.C.

SPECIFICATIONS PUBLISHED.

24689 of 1899. Gotz. Photographic film holders or dark slides for sensitive surfaces on pliable supports.

24684 of 1899. Romano. Apparatus for taking photographs.

2132 of 1900. Granichstaedten. Kinematographs or means for displaying a series of pictures.

22180 of 1899. Boult (Fuller). Mirror apparatus for scenic effects.

23863 of 1899. Davidson. Cinematographs for taking and projecting photographs in colours.

24319 of 1899. Thornton-Pickard Manufacturing Company, Limited. Photograph shutters and iris diaphragms therefor.

256 of 1900. Huet. Binoculars.

470 of 1900. Mills (Soc. Anon. des Plaques et Papiers Photographiques, A. Lumiere et ses Fils). Reducing agents for photographic negatives.

994 of 1900. Hearson. Apparatus for use in and in connection with the coating of photographic films and plates with sensitive emulsions.

5444 of 1900. Stonebridge. Lanterns.

11442 of 1900. Hector. Portable houses. (Date applied for under International Convention, 15th January, 1900.)

Correspondence.

A COMMENT ON MR. E. H. STEVENSON'S NOTES ON AUSTRALIA.

To Mr. J. Hay Taylor, Editor.

DEAR SIR,—I read with pleasure the article by Mr. E. H. Stevenson in your August issue, which, with the exception of wrong names of places, will be read by Victorians with interest. But as we do not like our colony to be misrepresented, I feel that we have to place ourselves right before the readers of your very widely read journal. Mr. Stevenson was good enough to mention my name in the article referred to, but immediately after stated that the ordinary price here for compressed gas was 1s. per foot. When Mr. Stevenson arrived in Melbourne I supplied him with gas at 6d. per foot, and that is the price we have been supplying it at for many months previous to that. We do not charge for cylinders nor regulators and charge only for the actual gas consumed, taking back any that may remain in the cylinders, so that I do not know why Mr. Stevenson required to place a wrong statement before your readers. Hoping you will give me a place in your valuable journal.

Yours, etc.,
Melbourne. ALEX. GUNN.

MARKING LANTERN SLIDES.

To Mr. J. Hay Taylor, Editor.

SIR,—Could not some pressure be brought to bear upon firms issuing lantern slides to make them adopt a clear and universal method of marking. This suggestion has, I know, been pressed in your columns over and over again, but seemingly with very little effect. At lantern shows I frequently have parcels of slides handed to me for exhibition that are either not marked at all, or so indefinitely that in the dim light the correct way of insertion cannot be seen. If in my many years of lantern projection my eyes have been injured, it has been very much more through efforts to discover the right way up of small hymns or obscure views than through the intensity of the light. With the closest scrutiny you cannot always avoid a mistake, which (as your attention is directed to carrier, etc.) is first made known to you by the derisive tittering of spectators. If there existed a clearly understood rule, and if people would not accept slides unless properly marked, the present irritating state of things would directly cease.

Obediently yours,
W. J. B.

—:o:—

Notes and Queries.

Optics.—We do not know where you can hire a set of slides to illustrate a lecture on optical illusions. A number of diagrams appeared in our back numbers. Mr. E. H. Wilkie, whose address you will see in the general advertisement column, made the original drawings, and would perhaps supply you with a set of slides from them. He has all the drawings.

Lanternist asks about a new incandescent light mentioned in the current issue of *Chambers' Journal*, which, however, gives few details. *Ans.*—The lamp spoken of has not yet been introduced in this country, but in some American scientific journals we have seen allusions to it. The address is Magic Light Co., 9 to 15, River Street, Chicago, U.S.A. From what we gather kerosene is forced by air pressure through a very fine opening in a burner, but the tube ere it reaches the burner takes a bend so that the flame heats the kerosene before it emanates from the burner in the form of a gas, a suitable disc is provided over the burner for mixing air with the gas so that it burns with a blue smokeless flame over which a mantle is suspended. The principle is somewhat the same as small cooking stoves used in this country under the names of Primus or Aetna.

F. J. Scrimgeour.—We congratulate you on your promotion in connection with your medical duties.

Flints.—The saturator we made mention of in last journal answers well for dissolving. The trouble in connection with saturators for dissolving lies not so much in the saturator itself as the dissolver. If a saturator has sufficient ether not to give an incandescent spot on lime when direct oxygen is off it can be used for dissolving, but in the dissolver it is necessary to have the hydrogen side well in advance of the oxygen side, much more so than when using compressed gas from two cylinders; in fact, the hydrogen or ether side should be allowed to turn quite up before the oxygen side is admitted. You can alter your dissolver yourself by filling the hydrogen nitch along the plug. If this is done properly you should have no trouble. With regard to the double saturator you have been using it is evident that it requires drying out, and we think the makers issue instructions for doing this. *Re* the screen which you consider rather yellow, a little blue added will rectify matters.

C. Kœnig.—Sometimes even the police take upon themselves more than they should. If, under the circumstances, you had gone on in spite of their protest, the probability is that you would have heard nothing more of it.

E. J. Strickland.—It by no means follows that the same conditions prevail in your town as in London, so your best way is to consult the authorities in your part.

Geo. Kilburn.—In our next.

Light.—1. Riley Bros. 2. Newton & Co. 3. F. Brown. 4 and 5. About the same as two cylinders.

J. S. D.—You may be able to obtain slides on naval architecture from Messrs. Newton & Co.

Old Subscriber.—As we understand your query, we think you have overlooked the fact that you cannot compare the light coming from the sitter's face with that passing through a lantern slide in position Had the slide or view at the screen been reduced on a plate of the size of a lantern slide, the difference with regard to the absolute focus of the different parts under the conditions would be much reduced. A lantern condenser is a crude appliance compared to a highly corrected photographic lens.

Church Service, Liverpool.—Your letter has been mislaid, and we forget your name. The slides suitable for a Church service may be obtained from any large lantern dealer. Better write a sermon to suit your slides.

E. Anderson.—We have received the circular which you enclosed and note that you think it wonderful that some cinematographic artists should be on hand to photograph the attack on a Chinese mission house or station. You appear to take matters too seriously, for the whole thing is a fake picture—a sort of pantomime scene enacted in this country with scenic backgrounds. We think makers of fake films should state so on their circulars.